

## **DIVISION 1 GENERAL REQUIREMENTS (2-13-02)**

### **The following changes apply to all Division 1 General Requirements:**

Delete "ESD" and replace with "Department of Finance".

Delete "Executive Services Department" and replace with "Department of Finance".

Delete "Executive Services Director" and replace with "Director of Finance".

Delete "Contract Compliance Section" and replace with "Construction & Consultant Contracting Division".

Delete "Public Works and Consultant Contracting Section " and replace with "Construction & Consultant Contracting Division".

## **SECTION 1-01 DEFINITIONS AND TERMS**

### **1-01.2(1) ASSOCIATIONS AND MISCELLANEOUS (2-13-01)**

Delete "ESD Executive Services Department".

### **1-01.3 DEFINITIONS (7-27-01)**

Revise the definition for BID GUARANTY by deleting the reference to “cash”.

## **SECTION 1-02 BID PROCEDURES AND CONDITIONS**

### **1-02.4(2) SUBSURFACE INFORMATION [2] (10-16-00)**

Supplement this section with the following:

\*Logs of soil borings in the vicinity of Project Work are located in the appendix of the Project Manual.\*

### **1-02.6 ADDENDA (7-27-01)**

In the second paragraph, delete the second sentence and replace with the following:

Addenda will be **sent** to persons or organizations to whom the Bid Documents were issued.

### **1-02.7 BID GUARANTY (7-27-01)**

Delete all references to “cash” in this section.

### **1-02.14 DISQUALIFICATION OF BIDDERS (10-16-00) [1]**

Renumber item number "10." to item number "11." and add new item number "10." as follows:

\*10. The Bidder under consideration for Award does not submit the Equal benefits Compliance Declaration, indicating compliance with SMC Ch. 20.45 and the Equal Benefit Program Rules.\*

## **SECTION 1-03 AWARD AND EXECUTION OF CONTRACT**

### **1-03.1(4) PRE-AWARD INFORMATION (10-16-00)**

**After the second paragraph, insert the following new paragraph:**

\*Except as may be provided for in Equal Benefits Program Rules, the Bidder under consideration for Award must submit the Equal Benefits Compliance Declaration to the Owner prior to Award. The compliance of the Bidder with SMC Ch. 20.45 and the Equal Benefit Program Rules shall be part of the Owner's evaluation of the Bidder's responsibility.\*

### **1-03.4 CONTRACT BOND (7-27-01)**

**Delete item 5. and replace with the following:**

5. Contain the following language:

IT IS FURTHER ACKNOWLEDGED that nothing of any kind or nature whatsoever that will not discharge the Principal shall operate as a discharge or a release of liability of the Surety, any law, rule of equity or usage relating to the liability of sureties to the contrary notwithstanding. The Surety waives notice of any alteration, or extension of time, made by the City except that any single or cumulative Change Orders amounting to more than 25% of the Awarded Contract Price shall require the consent of the Surety.

The Surety consents to be bound by the laws of the State of Washington and subjected to the jurisdiction of the courts of the State of Washington;

### **1-03.6 RETURN OF BID GUARANTY (7-27-01)**

**Delete all references to "cash" in this section.**

## **SECTION 1-04 SCOPE OF WORK**

### **1-04.5 DISPUTES AND CLAIMS RESOLUTION PROCESS (10-16-00)**

#### **1-04.5(3) CLAIMS (10-16-00)**

**In item 9., revise the following subitems as follows:**

In subitem a., revise "20% markup" to read "26% markup";  
In subitem b., revise "15% markup" to read " 21% markup";  
In subitem c., revise "15% markup" to read "21% markup";  
In subitem d., revise the first sentence to read "Overhead and profit: Markups for Project overhead, general company overhead, bonding, insurance, Business & Occupation tax, and profit shall not exceed the markups allowed in Section 1-09.6;"

## **SECTION 1-05 CONTROL OF WORK**

### **SECTION 1-05.5 CONSTRUCTION STAKES**

**Delete the third paragraph and replace with the following:**

The Contractor shall provide a work site that has been prepared to permit construction staking to proceed in a safe and orderly manner. The Contractor shall keep the Engineer informed of staking requirements. Within 72 hours (3 full working days) of receiving a survey staking request from the Contractor, the Engineer will respond with a schedule of how the staking work will proceed.

## **SECTION 1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC**

### **1-07.11 EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS**

**Delete this title and replace with the following new title:**

#### **1-07.11 EQUAL EMPLOYMENT OPPORTUNITY AND NON-DISCRIMINATION REQUIREMENTS (2-13-01)**

##### **1-07.11(1) GENERAL (10-16-00)**

**After the first paragraph, insert the following new paragraph:**

\*The Owner and the Contractor are each required to comply with the Fair Contracting Practices Ordinance of The City of Seattle (Ordinance 119601), as amended. Conduct made unlawful by the ordinance constitutes a breach of Contract. Engaging in an unfair contracting practice may also result in the imposition of a civil fine or forfeiture under the Seattle Criminal Code as well as various civil remedies.\*

##### **1-07.11(2) EQUAL EMPLOYMENT OPPORTUNITY POLICY (2-13-01)**

**Delete paragraph one and subparagraphs one through four and replace with the following:**

\*The Contractor shall accept as operating policy the following statement which is designed to further the provision of equal employment opportunity to all persons and to promote the full realization of equal employment opportunity through a positive continuing program:

"The Contractor will not discriminate against any employee or applicant for employment because of race, religion, creed, age, color, sex, marital status, sexual orientation, gender identity, political ideology, ancestry, national origin, or the presence of any sensory, mental or physical handicap, unless based upon a bona fide occupational qualification. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, creed, age, color, sex, marital status, sexual orientation, gender identity, political ideology, ancestry, national origin, or the presence of any sensory, mental or physical handicap. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment, or recruitment advertising, layoff or termination rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

"The Contractor will, prior to commencement and during the term of the Contract, furnish to the Executive Services Director (as used herein Director means the Director of the Executive Services Department or the Director's designee) upon the Director's request and on such form as may be provided, a report of the affirmative actions taken by the Contractor in implementing the terms of these provisions. The Contractor will permit access to the Contractor's records of employment, employment advertisements, application forms, and other pertinent data requested by the Director to determine compliance with these requirements.

"If the Director finds probable cause to believe that the Contractor has failed to comply with the terms of these provisions, the Contractor shall be so notified in writing. The Director will give the Contractor an opportunity to be heard within 10-days of the date written notification is sent. After hearing and considering the Contractor's response to the findings (if any) the Director will make a final decision as to whether the Contractor has failed to comply with the provisions of the Contract. If the Director's final decision is that the Contractor has failed to comply with the provisions of the Contract, the Director may suspend the Contract, withhold any funds due or to become due to the Contractor, or both pending compliance by the Contractor."\*

## **1-07.11(6) PERSONNEL ACTIONS (10-16-00)**

**Delete paragraph one and replace with the following:**

\*Wages, working conditions, and employee benefits shall be established and administered; and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, religion, creed, age, color, sex, marital status, sexual orientation, gender identity, political ideology, ancestry, national origin, or the presence of any sensory, mental or physical handicap. The following procedures shall be followed:\*

## **1-07.11(10) RECORDS AND REPORTS**

**Delete subsections A through D in this section and replace with the following:**

### **1-07.11(10) RECORDS AND REPORTS (7-27-01)**

#### **1-07.11(10)A GENERAL (7-27-01)**

The Contractor shall keep such records as are necessary to determine compliance with the Contractor's equal employment opportunity obligations. The records kept by the Contractor shall indicate:

1. **Work Force Data:** The number of minority and non-minority group members and women employed in each work classification on the project.
2. **Good Faith Efforts - Unions:** The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to contractors who rely in whole or in part on unions as a source of their work force).
3. **Good Faith Efforts - Recruitment:** The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and women employees.
4. **Subcontracting:** The progress and efforts being made in securing the services of minority group and women subcontractors and subcontractors with meaningful minority and women representation among their employees.

#### **1-07.11(10)B WORK FORCE PROFILE (New Section) (7-27-01)**

The Contractor may be required to submit Equal Employment Opportunity (EEO) Reports detailing actual employment data to the Department of Finance (Public Works and Consultant Contracting Section), in accordance with Department of Finance instructions. Separate EEO reports may also be required for any subcontractor(s) utilized for work under this Contract.

When reports are requested, the Contractor and each Subcontractor(s), shall not combine EEO reporting information of separate contracts or projects. Each contract or project shall be reported separately. The shifting of minorities and women to the work force of various separate projects in an attempt to show compliance within an affirmative action plan will not be acceptable.

To meet the record and reporting requirements, the Contractor and each Subcontractor shall:

- a. Maintain a current file of the names, addresses, and telephone numbers of all job applicants specifying the race and gender of each job applicant, and the action taken with respect to such job applicant.
- b. Maintain and keep a written record of the time and place of notices regarding affirmative action, persons notified, and the specific subject of the notice.

- c. Maintain records in an easily retrievable and understandable format that will document any and all openings and opportunities for advancement that occur; the Contractor's efforts to train, recruit, and promote minorities and women; and the results of those affirmative action efforts.

The Department of Finance may also require the Contractor to submit such other additional EEO forms and/or EEO documentation as may be required to determine the Contractor's and each Subcontractor's compliance with this Section.

#### **1-07.11(10)C REQUIRED RECORDS AND RETENTION (7-27-01)**

Records shall be retained for a period of three years following the Completion Date and shall be available at reasonable times and places for inspection by authorized representatives of the Owner, and when applicable, the State Department of Transportation and the Federal agency providing funds for the Work.

#### **1-07.11(11) COMPLIANCE MONITORING**

**Delete this section and replace with the following:**

#### **1-07.11(11) COMPLIANCE MONITORING (7-27-01)**

The Department of Finance reserves the right to monitor the affirmative action programs and efforts of the Contractor and each Subcontractor, utilizing the EEO documentation submitted by the Contractor for the Contractor and each Subcontractor, to determine the affirmative action efforts made by the Contractor and each Subcontractor. The Contractor shall cooperate fully with the Department of Finance and shall be responsible for each Subcontractor's compliance. If the Department of Finance is not satisfied that the documentation submitted by the Contractor complies with the requirements herein, an attempt will be made by the Department of Finance to reach a satisfactory solution of the problem with the Contractor. Should discussions between the Department of Finance and the Contractor result in an unsatisfactory conclusion, as determined by the Department of Finance, then the Department of Finance will find that the Contractor has not made a good faith effort and is in noncompliance with the Contractor's sworn statement to ensure equality of opportunity in employment during the term of the Contract.

Coincident with or before a report from the Department of Finance asserting unsatisfactory performance is sent to the Owner, the Department of Finance will notify the Contractor in writing of such report and of the Contractor's right to be heard by the Owner. The Owner will give the Contractor an opportunity to be heard after 10 days notice. If the unsatisfactory performance is by a subcontractor, the Contractor will be given an opportunity to remedy the subcontractor's noncompliance before the report is sent to the Owner.

If after said hearing, the Owner concurs with the report submitted by the Department of Finance that (1) the Contractor has failed to comply with the promises and representations made in the sworn statement and other required documentation or (2) has failed to live up to or ensure compliance with the employment goals established in the Contract pursuant to Section 20.44.100 of the Seattle Municipal Code, the Owner will find the Contractor in noncompliance. Thereafter, the Owner will not enter into a contract with the noncomplying Contractor until the Owner is reasonably assured of future satisfactory compliance. This action will be in addition to such other remedies which may be available to the Owner under the provisions of the Contract.

#### **1-07.11(14) NON-DISCRIMINATION IN EMPLOYEE BENEFITS (New Section) (10-16-00)**

Compliance with SMC Ch. 20.45: The Contractor shall comply with the requirements of SMC Ch. 20.45 and Equal Benefits Program Rules implementing such requirements, under which the Contractor is obligated to provide the same or equivalent benefits ("equal benefits") to its employees with domestic partners as the Contractor provides to its employees with spouses. At the Owner's request, the Contractor shall provide complete information and verification of the Contractor's compliance with SMC Ch. 20.45. Failure to cooperate with such a request shall constitute a material breach of this Contract. *(For further information about SMC Ch. 20.45 and the Equal Benefits Program Rules call (206) 684-0202 or review information at <http://cityofseattle.net/contract/equalbenefits/>)*

Remedies for Violations of SMC Ch. 20.45: Any violation of this Section 1-07.11(14) shall be a material breach of Contract for which the Owner may:

1. Require the Contractor to pay liquidated damages in the amount of five hundred dollars (\$500.00) per day for each day that the Contractor is in violation of SMC Ch. 20.45 during the term of the Contract; or
2. In the event the Contractor willfully refuses or repeatedly fails to comply with the requirements of SMC Ch. 20.45, terminate the Contract; or
3. Disqualify the Contractor from bidding on or being awarded a City contract for a period of up to five (5) years; or
4. Impose such other remedies as specifically provided for in SMC Ch. 20.45 and the Equal Benefits Program Rules promulgated thereunder.\*

#### **1-07.12(2) NON-DISCRIMINATION (10-16-00)**

**Delete this Section and replace with the following:**

Contractors, Bidders, and proposers shall not create barriers to open and fair opportunities for WMBEs to participate in all City contracts and to obtain or compete for contracts and subcontracts as sources of Supplies, Equipment, construction and services. In considering offers from and doing business with Subcontractors and Suppliers, the Contractor shall not discriminate on the basis of race, religion, creed, age, color, sex, marital status, sexual orientation, gender identity, political ideology, ancestry, national origin, or the presence of any mental or physical disability in an otherwise qualified disabled person.

#### **1-07.12(5) SANCTIONS FOR VIOLATION (4-18-02)**

**Delete the second paragraph in its entirety.**

#### **1-07.15 TEMPORARY WATER POLLUTION/EROSION CONTROL**

**Delete this Section in its entirety and replace with the following:**

##### **1-07.15(1) GENERAL (New Section)**

Temporary water pollution/erosion control work shall be the responsibility of the Contractor and consist of temporary measures that may be indicated in the Contract Documents, proposed by the Contractor and approved by the Engineer, or ordered by the Engineer during performance of the Work. This temporary work is intended to provide prevention, control, and abatement of water pollution/erosion within the limits of the Project, and to minimize damage to the Work, adjacent property, streams, and other bodies of water.

Controlling pollution, erosion, run-off, and related damage may require the Contractor to perform temporary work items including but not limited to:

1. Providing ditches, berms, culverts, and other measures to control surface water;
2. Building dams, settling basins, energy dissipaters, and other measures, to control downstream flows;
3. Controlling underground water found during construction; or
4. Covering or otherwise protecting slopes until permanent erosion-control measures are working.
5. Covering and protecting all exposed soil, stock piles, excavated material with clear plastic sheeting.
6. Pumping ponded stormwater out of a given construction area before initiating construction activities in that area following a rain event.

The Contractor is hereby notified that compliance with these requirements may necessitate performance of certain items of work at a different time or in a different manner than has been considered normal construction practices in the past and that such revisions in scheduling of Work may interfere with said normal construction practices.

The Contractor shall, before starting the Work, submit to the Engineer for approval an effective temporary water pollution/erosion control plan. The plan shall show the scheduling, as it relates to the Contractor's

critical path schedule, for permanent pollution and erosion control work and for temporary erosion control measures the Contractor proposes to take, to prevent water pollution/erosion due to the Work on:

1. Areas within the limits of the Project Site.
2. Other work areas outside the Project Site.
3. Haul roads.
4. Adjacent property.
5. Streams and other bodies of water.

The Contractor shall not perform clearing, grubbing or any other earthwork on the Project, other than that specifically authorized in writing by the Engineer, until the plan has been approved. The Contractor shall revise and bring the plan up to date whenever the Engineer makes written request for revisions. The Contractor shall allow the Engineer not less than ten (10) Working Days for the review of a submitted plan whether the original or revised. The Engineer will not be liable to the Contractor for failure to approve all or any portion of an originally submitted or revised water pollution/erosion control plan, nor for any delays to the work due to the Contractor's failure to submit an acceptable plan.

The Contractor shall coordinate temporary water pollution/erosion control work with the permanent drainage and erosion control work that may be specified in the Contract Documents to ensure continuous water pollution/erosion control is maintained during performance of the Work.

If the Engineer, under Section 1-08.6, orders the work suspended for an extended time, the Contractor shall make, before the Engineer assumes maintenance responsibility, every effort to control erosion, pollution, and run-off during shutdown. Section 1-08.7 describes the Engineer's responsibility in such cases.

The area of excavation, borrow, and embankment operations in progress will be limited commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other permanent erosion control measures current according to the accepted critical path schedule. If the Engineer determines that water pollution or erosion could occur due to seasonal limitations, the nature of the material, or the Contractor's progress, temporary water pollution/erosion control measures shall be taken immediately. The Engineer may require the Contractor's operations to be scheduled so those permanent erosion control features will be installed concurrently with or immediately following grading operations.

Under no conditions shall the amount of surface area of erodible earth material exposed at one time by clearing and grubbing, excavation, borrow or fill within the Right of Way exceed **12,000** square feet (approximately a two block area) without prior approval by the Engineer.

No water shall be allowed through the vegetated swales until the Mineral Aggregate Type 4 mulch has been placed and approved by the Engineer. Until approval for stormwater discharge is granted by the Engineer, stormwater runoff shall be bypassed around swale areas. The cost of the work required to bypass stormwater runoff shall be included in the lump sum price bid for "Temporary Erosion And Sediment Control" and no separate payment will be made.

Permanent erosion control work ordered by the Engineer and not covered in the Bid will be considered extra work and paid for as such.

#### **1-07.15(2) TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN (New Section)**

This work shall consist of the preparation and implementation of a Temporary Erosion and Sediment Control (TESC) Plan.

The Contractor shall submit a Temporary Erosion and Sedimentation Control (TESC) Plan to the Engineer for approval prior to the start of construction. The TESC Plan shall be implemented, monitored, and maintained by the Contractor. The TESC Plan shall be considered a living document that shall be updated to reflect adjustments to on-site Best Management Practices (BMPs) that are necessary for continuing to meet all applicable regulations, including minimizing erosion, containing sediment within the work area, and protecting water quality as field conditions change. All BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. All on-site erosion and sediment control measures shall be inspected at least once every seven days and within 24 hours after any storm event of

greater than 0.5 inches of rain per 24 hour period. Reports summarizing the scope of inspections, the personnel conducting the inspection, the date(s) of the inspection, major observations relating to the implementation of the TESC, and actions taken as a result of these inspections shall be prepared and retained as part of the TESC plan. Omissions in documentation or failure to perform field reviews and/or provide appropriate action to meet regulatory requirements shall constitute a violation of this contract and shall be justification for the issuance of a stop work order by the Engineer.

#### **1-07.15(2)A TESC PLAN REQUIREMENTS (New Section)**

The TESC plan shall identify potential sources of erosion and sediment at the site. The Plan shall outline actions to be taken to ensure no sediments will be allowed to enter the existing drainage or surface system.

The TESC plan shall address, at a minimum, the following:

- Delineate clearing limits;
- Identify site drainage and discharge patterns;
- Install erosion control BMPs, including stormwater bypass system;
- Install sediment control BMPs;
- Install BMPs to protect storm water system;
- Control dewatering discharges;
- Monitor and maintain BMPs.

#### **1-07.15(3) TESC MEASURES (New Section)**

##### **1-07.15(3)A GENERAL (New Section)**

The measures specified herein are the minimum that are required for the anticipated site conditions. Additional measures may be needed due to weather, field conditions, or construction activities.

To reduce sediment, the Project site shall be cleaned daily. The site shall be swept either by hand or with self-propelled mechanical sweepers.

##### **1-07.15(3)B MATERIALS (New Section)**

###### **A. Inlet Protection**

The catch basin inserts shall fit under standard catch basin gratings and be capable of removing contaminants such as oil and grease, sediment, floatables, and debris from stormwater and shall work without chemicals.

Inserts shall be made primarily from geotextile sewn together with monofilament thread. The geotextile shall be resistant to degradation from ultraviolet exposure and shall meet or exceed the following minimum property requirements:

**CATCH BASIN INSERTS**

Fabric Property	Test Method	Unit	Value
Fabric Weight	ASTM D-5261	oz/yd	8.0
Fabric Thickness	ASTM D-5199	mils	145
Grab Tensile Strength	ASTM D-4632	lbs	270/300
Grab Elongation	ASTM D-4632	percent	60/80
Trapezoid Tear Strength	ASTM D-4533	lbs	110/130
Puncture Resistance	ASTM D-4833	lbs	160
Mullen Burst Strength	ASTM D-3786	psi	535
Water Flow Rate	ASTM D-4491	gpm/ft <sup>2</sup>	120 *
Permeability	ASTM D-4491	cm/sec	0.5
Permissivity	ASTM D-4491	sec <sup>-1</sup>	1.26
U.V. Resistance	ASTM D-4355	percent	70
Apparent Opening Size	ASTM D-4751	US Sieve (mm)	70 (0.212)



\* The total water flow rate through the insert in new condition should be in excess of 500 gpm, with an overflow rate of approximately 250 gpm.

**Products:**

- a. Storm Watch Catch Basin Insert (for sediment only) as manufactured by Price-Moon Enterprises
- b. StreamGuard Sediment Catch Basin Insert, #3003

**B. Clear Plastic Sheeting**

Clear plastic covering shall meet the requirements of the NBS Voluntary Product Standard, PS 17-69, for polyethylene sheeting having a minimum thickness of 6 mil.

**1-07.15(3)C CONSTRUCTION REQUIREMENTS (New Section)**

**Inlet Protection**

Catch basin inserts shall fit snugly and securely under the catch basin gratings and shall be installed, maintained, and removed per the manufacturer's instructions. The Engineer shall be consulted for approval prior to any maintenance activities to be performed on the inserts. Inserts shall not be removed without the approval of the Engineer. The Contractor shall inspect the inserts weekly and after each precipitation event.

**Clear Plastic Sheeting**

The Contractor shall place the Clear Plastic Sheeting parallel to the flow of water and evenly and smoothly in contact with the soil at all points. Sheeting shall be secured against soil slope by using gravelbags, strawbales or other approved material. The up-slope end of each strip of matting shall be secured for the full width of matting; method of securing sheeting shall also provide means to redirect sheet flow off of street away from construction area. The Engineer may require that any other edge exposed to more than normal flow of water or strong prevailing winds be secured in a similar manner. The full area of the sheeting shall be secured with a maximum of 10-foot grid spacing in all directions. Minimum overlap of plastic sheeting seams shall be 12-inches. All seams shall be weighted down full length. The Contractor shall inspect the plastic sheeting after each precipitation event.

**1-07.15(4) MEASUREMENT (New Section)**

Measurement for "Temporary Erosion and Sediment Control" will be by the lump sum.

**1-07.15(5) PAYMENT (New Section)**

Compensation for the cost necessary to complete the work described herein will be made at the unit contract prices bid only for the pay items listed or referenced below:

- (1) "Temporary Erosion and Sediment Control", per lump sum.

The lump sum contract price for "Temporary Erosion and Sediment Control" shall include all costs to complete the work as specified in Section 1-07.15.

## 1-07.18 INSURANCE

Delete this Section in its entirety and replace with the following:

### 1-07.18(1) GENERAL (4-8-02)

Prior to undertaking any Work under this Contract, the Contractor shall obtain and file with the Owner, acceptable evidence of a policy or policies of insurance as enumerated below.

Failure of the Contractor to fully comply with the insurance requirements of the Contract will be considered a material breach of Contract and, at the option of the Owner, will be cause for such action as may be available to the Owner under other provisions of the Contract Documents or otherwise in law, including immediate termination of the Contract.

The cost of furnishing insurance shall be incidental to and included in the lump sum or unit prices bid by the Contractor for the various items of Work listed in the Bid Form.

### 1-07.18(2) REQUIRED COVERAGES (4-8-02) [1]

The insurance shall contain the following types of coverages and minimum dollar limits:

1. **Commercial General Liability Insurance:** A policy of Commercial General Liability insurance, written on an insurance industry standard occurrence form (CG 00 01) or equivalent, including all the usual coverages known as:
  - a. Premises/Operations Liability
  - b. Products/Completed Operations
  - c. Personal/Advertising Injury
  - d. Contractual Liability
  - e. Independent Contractors Liability
  - f. Stop Gap/Employers Contingent Liability
  - g. Explosion, Collapse, or Underground (XCU)
  - h. Watercraft Liability – Owned and Non-owned\*

\* This coverage is only required when the Contractor's Work under this Contract includes exposures to which this coverage responds.

Such policy(ies) must provide the following minimum coverage limits:

#### Bodily Injury and Property Damage

- |    |              |   |
|----|--------------|---|
| a. | \$ 1,000,000 | General Aggregate                         |
| b. | \$ 1,000,000 | Products & Completed Operations Aggregate |
| c. | \$ 1,000,000 | Personal & Advertising Injury             |
| d. | \$ 1,000,000 | Each Occurrence                           |
| e. | \$ 100,000   | Fire Damage Legal                         |

#### Stop Gap/Employers Liability

- |    |              |                         |
|----|--------------|-------------------------|
| a. | \$ 1,000,000 | Each Accident           |
| b. | \$ 1,000,000 | Disease - Policy Limit  |
| c. | \$ 1,000,000 | Disease - Each Employee |

2. **Business Automobile Liability:** A policy of Business Automobile Liability, including coverage for owned, non-owned, leased or hired vehicles written on an insurance industry standard form (CA 00 01) or equivalent, and as specified by Insurance Services Office Symbol 1 (any auto). If "pollutants" as defined in exclusion 11 of the commercial auto policy are to be transported, endorsement CA9948 & MCS 90 are required.

Such policy(ies) must provide the following minimum limit:

#### Bodily Injury and Property Damage

- |              |              |
|--------------|--------------|
| \$ 1,000,000 | per accident |
|--------------|--------------|

3. **Worker's Compensation:** A policy of Worker's Compensation. As respects Workers' Compensation insurance in the state of Washington, the Contractor shall secure its liability for industrial injury to its employees in accordance with the provisions of Title 51 of the Revised Code of Washington. The Contractor shall be responsible for Workers' Compensation Insurance for any Subcontractor who provides services under the Contract. Additionally, if the Contract requires working on or around a navigable waterway the Contractor shall provide evidence of United States Longshoremen's and Harbor Workers' (USL&H) coverage and contingent coverage for Jones Act (Marine Employers Liability) in compliance with Federal Statutes. If the Contractor is qualified as a self-insurer in accordance with Chapter 51.14 of the Revised Code of Washington, Contractor shall so certify to the Owner by submitting a letter signed by a corporate officer, indicating that it is a qualified self-Insurer, and setting forth the limits of any policy of excess insurance covering its employees; or any similar coverage required.

Contractor hereby assumes all risk of damage to its property, or injury to its officers, directors, agents, contractors, or invitees, in or about the Project from any cause, and hereby waives all claims against the Owner. The Contractor further waives, with respect to the Owner only, its immunity under RCW Title 51, Industrial Insurance, of the Revised Code of Washington.

4. **Other Special Coverages:** If the Contract requires Work for remediation, abatement, disposal, transporting or other handling of one or more pollutants, additional coverage is required for sudden & non-sudden bodily injury, sickness, disease, mental anguish or shock sustained by any person including death; property damage including physical injury to or destruction of tangible property including the resulting loss of use thereof, clean up costs, and the loss of use of tangible property that has not been physically injured or destroyed; defense including cost, charges and expenses incurred in the investigation, adjustment of defense of claims for such compensatory damages, as follows:
- a. *If Work involves remediation, disposal or other handling of pollutants at sites which are owned or occupied during construction or remediation operations by the Contractor, a Contractor's Pollution Liability policy is required.*
  - b. *If Work involves remediation, abatement, repair, maintenance or other work with lead-based paint or materials containing asbestos, a specific pollution Liability policy covering that exposure is required.*
  - c. If Work involves storage, transfer, treatment or other processing of pollutants at a disposal site owned or occupied by the Contractor, a Pollution Legal Liability policy is required.

Such policy(ies) shall provide at a minimum limits of:  
\$1,000,000 per loss/per annual aggregate

#### **1-07.18(3) CLAIM MADE POLICIES (4-8-02)**

If any policy required by Section 1-07.18 is written on a claim made form, the retroactive date shall be prior to or coincident with the effective date of this Contract. The policy shall state that coverage is claim made, and shall state the retroactive date of the coverage. The Contractor shall maintain the claim made form coverage continuously in force for a minimum of three years following the Completion Date of the Contract. The Contractor shall annually provide the Owner with proof of renewal. If renewal of the claim made form of coverage becomes unavailable, or economically prohibitive, the Contractor shall purchase an extended reporting period ("tail") that shall run at least through the Completion Date, or execute another form of guarantee acceptable to the Owner to assure financial responsibility for liability for services performed.

#### **1-07.18(4) DEDUCTIBLES (4-8-02)**

If the Contractor's insurance contains a deductible (or self-insured retention amount) the Contractor shall:

- 1. Disclose such amount.
- 2. *Be responsible for payment of any claim equal to or less than the deductible (or self-insured retention amount).*

The Owner reserves the right to reject any insurance policy with a deductible (or self-insured retention amount) for which adequate financial strength of the Contractor cannot be demonstrated to the satisfaction of the Owner.

#### 1-07.18(5) CONDITIONS (4-8-02)

The insurance policy or policies, endorsements thereto, and subsequent renewals shall:

1. Be subject to approval by the Owner as to company, form and coverage. The insurance company shall be:
  - a. Rated A-:VII or higher in the A.M. Best's Key Rating Guide.
  - b. Licensed to do business in the State of Washington or be filed as surplus line by a Washington surplus line broker.
2. Be primary as respects the City, and any other insurance maintained by the City shall be excess and not contributing insurance with the Contractor's insurance;
3. Be maintained in full force and effect through the Physical Completion Date;
4. Protect The City of Seattle within the policy limits from any and all losses, claims, actions, damages, and expenses arising out or resulting from the Contractor's performance or lack of performance under this Contract;
5. **Name The City of Seattle as an additional insured, including completed operations, pursuant to the requirements of Section 1-07.18(6) Evidence of Insurance;**
6. Include a provision (whether by endorsement or otherwise) indicating that, except with respect to the limits of insurance and any rights or duties specifically assigned to the first named insured, the insurance shall apply:
  - a. As if each party insured thereunder (whether as a named insured, additional named insured, or additional insured) were the only party insured by such policy; and
  - b. Separately to each insured against whom a claim is made or a suit is brought.
7. Include all Subcontractors as insureds. Alternatively, the Contractor shall *obtain from each Subcontractor not insured under the Contractor's policy or policies of insurance, evidence of insurance meeting all the requirements of Section 1-07.18.*

#### 1-07.18(6) EVIDENCE OF INSURANCE (4-8-02)

In many cases, evidence of insurance may be demonstrated by submitting a copy (photocopy or facsimile acceptable) of the declarations pages of the policy, the endorsement forms list, and the additional insured endorsement. The declarations pages shall clearly show the policy effective dates, the policy number, policy limits, and named insured. Any reference to premiums may be blacked out. However at the option of the Owner, the Contractor may be required to submit a copy of the insurance policy, all referenced endorsements, or both. Certificates of Insurance (ACORD forms) will not be accepted as evidence of insurance.

Evidence of insurance for each policy shall:

1. Be submitted to the Owner with the signed Contract per Section 1-03.3(2).
2. Comply with all of the requirements for insurance required by this Section 1-07.18.
3. Comply with one of the following requirements regards naming The City of Seattle as an additional insured:
  - a. Insurance Services Office (ISO) Standard Endorsement: An additional insured endorsement issued on an ISO form (i.e. CG 20 10 11 / 85 or CG 20 26) shall name "The City of Seattle, its officers, elected officials, employees, agents, and volunteers" (and any other entity or person specifically identified in the Project Manual) as additional insureds. The endorsement shall
    - (1) Be signed by an authorized representative of the insurance company; and
    - (2) Include the policy number and name of the insured on the endorsement.
  - b. Non-ISO Endorsements: For Non-ISO endorsements any of the following options are acceptable:
    - (1) A blanket clause (in the policy or endorsement) adding, without undue restriction of coverage, **including completed operations**, as additional insured anyone for whom the Contractor is required to provide insurance under a contract or permit.
    - (2) An additional insured endorsement on a non-ISO endorsement form containing the following provision:

"The City of Seattle, its officers, elected officials, employees, agents, volunteers, and any other entity or person specifically identified in the Project Manual are an additional insured, **including completed operations**, for all coverages provided by this policy and shall be fully and completely protected to the extent provided in said policy for any and every injury, death, damage and loss of any sort sustained by any person, organization or corporation in connection with any activity performed by the Contractor by virtue of the provisions of the Contract between The City of Seattle and (insert name of Contractor) entitled (insert Project name and PW Contract No.) dated / / ."

"In accordance with RCW 48.18.290, the coverages provided by this policy to The City of Seattle shall not be terminated, reduced or otherwise materially changed without providing at least forty-five (45) days prior written notice to The City of Seattle."

- (3) Any other additional insured endorsement form or clause approved by the Owner.

#### **1-07.18(7) RESERVED**

#### **1-07.18(8) INDEMNIFICATION (4-8-02)**

The Contractor shall defend, indemnify and save harmless the Owner and its officers, employees and agents from every claim, risk, loss, damage, demand, suit, judgment and attorney's fee, and any other kind of expense on account of injury to or death of any and all persons, or on account of property damage of any kind, whether tangible or intangible, or loss of use resulting therefrom arising out of or in any manner connected with the Work performed under this Contract, or caused or occasioned by reason of the presence of the property, or an officer, employee or agent of either the Contractor or a subcontractor upon or in proximity to the property of the Owner, at any time before the Completion Date.

If the claim, suit, or action for injuries, death, or damage is caused by or results from the concurrent negligence of (a) the Contractor or its officer, agent, or employee and (b) the Owner or its officer, agent or employee, these indemnity provisions shall be valid and enforceable only to the extent of the Contractor's negligence.

The Contractor shall also indemnify, defend, and save harmless any county, city or district and the officers and employees of said county, city or district connected with the Work within the limits of which county, city or district the Work is being performed hereunder all in the same manner and to the same extent as provided above for the protection of the Owner and the Owner's officers, employees and agents provided that no retention of money due the Contractor will be made by the Owner except as provided in RCW 60.28, pending disposition of suits or claims for damages brought against the county, city or district.

#### **1-07.18(9) WORKER'S BENEFITS (4-8-02)**

The Contractor shall make all payments required for unemployment compensation under Title 50 RCW and for industrial insurance and medical aid required under Title 51 RCW. If any payment required by Title 50 or Title 51 is not made when due, the Owner may retain such payments from any money due the Contractor and pay the same into the appropriate fund.

For work on or adjacent to water, the Contractor shall make the determination as to whether workers are to be covered under the Longshoremen's and Harbor Worker's Compensation Act administered by the U.S. Department of Labor, or the State Industrial Insurance coverage administered by the Washington State Department of Labor and Industries, or both coverages.

The Contractor shall include in the various items in the bid proposal all costs for payment of unemployment compensation and for providing either or both of the insurance coverages. The Contractor will not be entitled to any additional payment for: (1) failure to include such costs, or (2) determinations made by the U.S. Department of Labor or the Washington State Department of Labor and Industries regarding the insurance coverage.

The Public Works Contract Division of the Department of Labor and Industries will provide the Contractor with applicable industrial insurance and medical aid classification and premium rates. The "Request for Release" form of the Department of Labor and Industries is also for the purpose of obtaining a release with respect to the payments of industrial insurance and medical aid premiums.

## **1-07.29 RESERVED (10-16-00)**

**Delete this Title and replace with the following new Title and Section:**

### **\*1-07.29 FIELD OFFICE FOR THE ENGINEER'S STAFF (New Section) [3]**

The Contractor shall provide a field office on or adjacent to the Project Site for the use of the Engineer's staff no later than the Notice to Proceed Date or by an alternate date established at the pre-construction meeting. The field office and its location shall be subject to the approval of the Engineer and shall meet the following requirements:

1. The field office shall be a weather-tight building, either portable or permanent structure a minimum of eight (8) feet wide with not less than 175 square feet of clear floor space, having at least one door, and a window area of not less than 36 square feet. Windows shall open to allow ventilation. Doors and windows shall be provided with bug screens. The interior walls shall be covered with material suitable for displaying Contract Drawings and progress charts, etc.
2. To deter break-in and theft, window and door glass shall be protected with heavy security screens on metal frames bolted to the walls and doors. All doors shall have 2 locks each: one doorknob keyhole lock and 1 deadbolt cylinder lock, each with its own distinct key. The Contractor shall provide 4 sets of keys for each lock.
3. The field office shall be level and, if portable, the structure shall be supported on blocks. If more than three (3) steps are required to enter the office, a floor-level landing of at least 12 square feet with railing shall be provided. Steps and landing shall be stable and slip resistant.
4. The Contractor shall be responsible for maintaining and cleaning the field office; repairing any damage to the structure, equipment and appurtenances; providing weekly janitorial services including supplying appropriate toilet room paper products, dispensers, and cleaning; and emptying trash receptacles, disposing trash, and relining trash receptacle.
5. The office shall be furnished with the following furniture, equipment and appurtenances reasonably presentable, in good working order, and acceptable to the Engineer:
  - a. Executive chair, each with seat cushion, adjustable height seat, tilt back, arm rests, and floor wheels (one);
  - b. Office desk, 30" x 60" minimum size, with at least 4 drawers which can be locked with key & one of which is set up for file folders, 2 sets of keys each desk (one);
  - c. Office table 36" x 72" (one);
  - d. Office chairs with seat & back cushion (four);
  - e. Four (4) drawer legal file steel cabinet (one) w/50 legal size folders and hanging folders, metal frame in each drawer to hold folders, locking feature and 2 sets keys;
  - f. Electric pencil sharpener (one);
  - g. Metal trash receptacles with trash liner inserts and 10 extra trash liners (one 41 quart size);
  - h. Photocopy machine, single or multiple tray frontload with 2 paper trays (8-1/2 x 11-inch and 8-1/2 x 14-inch), own understorage cabinet, floor wheels to accommodate service technician, 10 foot (min.) surge protector power cord feed, and a repair and maintenance service contract with 4 hour service response on-site parts and labor;
  - i. FAX machine (plain paper) with 20 foot min. surge protector power cord feed; and
  - j. Extra 10 foot (min.) power cord with multiple plug-in surge protector.
6. Electric power of sufficient capacity to operate a computer, electric heater, air conditioner, typewriter, FAX machine, modem, calculator and lights shall be provided and shall include a minimum of four duplex convenience outlets. The office shall be illuminated at the tables and desks. An outdoor light fixture with a 150 watt bulb or approved equal shall be installed to effectively light the area around the office facility.
7. Contractor shall provide drinking water with disposable cup dispenser and 50 cups, and integrated sanitary facilities with toilet and wash basin or a chemical toilet facility adjacent to the office for the exclusive use of the Engineering staff.
8. The Contractor shall provide both local and long distance telephone service with three (3) separate phone lines (one for voice, one for a modem, and one for FAX); one (1) single line

“touch-tone” phone; “Centraflex” service with “call pickup, voice mail, and call forwarding.” Each phone and modem installation shall include 10 foot long extension cord between phone jack and instrument to serve the desks and tables.

9. The Contractor shall provide heating and air-conditioning of sufficient capacity to heat the office to 70° F within 1 hour, and to cool the office 10° F within 1 hour.

The field office shall be strictly for the use of the Engineer’s staff.

The field office, equipment and appurtenances supplied by the Contractor shall revert to and be removed by the Contractor when the Engineer, via the Written Notice of physical completion to the Contractor, establishes the Physical Completion Date.

If the Contractor fails to provide a field office as specified, the Engineer shall have the right to withhold progress payments in accordance with Section 1-09.9(3). If the Contractor has not provided the field office by the established deadline or if the Contractor removes or closes the field office prior to Written Notice of physical completion without approval from the Engineer, the Contractor shall be charged Liquidated Damages in accordance with Section 1-08.9. In the event a field office has not been provided by the Contractor thirty calendar days after the established date, the Engineer will have the option to provide the field office. If the Engineer elects to provide the field office, the Engineer will give Written Notice to the Contractor and all costs for the Engineer to provide the field office meeting the requirements specified in Section 1-07.29 shall be charged to the Contractor and deducted from monies due or to become due the Contractor on Monthly Estimates. Upon deliverance of such Written Notice, the Contractor’s right to provide the field office shall be forfeited.

All costs for the work required to provide the field office as specified in Section 1-07.29 and to procure all permits and licenses required for the field office, shall be included in the lump sum Contract Price Bid for “Mobilization.” All costs for the work required to relocate the field office, if required, shall be considered incidental to the Bid item “Mobilization.” \*

## **SECTION 1-08 PROSECUTION AND PROGRESS**

### **1-08.1(2) PRECONSTRUCTION CONFERENCE (7-27-01)**

In the last paragraph, delete item 5. “Contractor’s Work Force Report Form”.

### **1-08.1(3) SUBCONTRACTING (2-13-01)**

Delete the last paragraph and replace with the following new paragraph:

*\*By no later than 30 Days after the Physical Completion Date, the Contractor shall submit to the Owner a completed Final Contract Payments Reporting Form, listing the name of and dollar amount paid to each Subcontractor and Supplier utilized by the Contractor providing more than \$5,000 worth of goods and/or services on the Project, as well as the dollar amount paid to the Contractor. A sample of the form is included in the Sample Forms section of the Project Manual. The Owner will not establish the Completion Date until the completed Final Contract Payments Reporting Form has been received.\**

### **1-08.9 LIQUIDATED DAMAGES (10-16-00) [2]**

Supplement this section with the following:

\*Liquidated Damages will be assessed in the amount of ninety dollars (\$90.00) for each day after the day established for the Engineer’s field office that the Contractor fails to provide the field office, and for each day the field office is removed or closed prior to the date the Contractor is given Written Notice of physical completion. These monies will be deducted from payment(s) due the Contractor. No deduction or payment of Liquidated Damages will release the Contractor from the Contractor’s obligation to provide the field office. If the Engineer elects to provide the field office in accordance with Section 1-07.29, Liquidated Damage charges as specified in Section 1-08.9 will cease upon deliverance of the Written Notice to the Contractor.\*

## **SECTION 1-09 MEASUREMENT AND PAYMENT**

### **1-09.6 FORCE ACCOUNT**

**Delete this Section in its entirety and replace with the following:**

#### **\*1-09.6 FORCE ACCOUNT (10-16-00)**

##### **1-09.6(1) GENERAL (10-16-00)**

The terms of the Contract or of a Change Order may call for work or Material to be paid for by force account. If so, then the objective of Section 1-09.6 is to reimburse the Contractor for all costs associated with force account work, including costs of labor, small tools, Supplies, Equipment, specialized services, Materials, applicable taxes and overhead and to include a profit commensurate with those costs. The amount to be paid shall be determined as specified in Sections 1-09.6(2) through and including 1-09.6(7).

##### **1-09.6(2) LABOR (10-16-00)**

Labor reimbursement calculations shall be based on a Contractor's "Project Labor List" (Contractor's List) prepared and submitted by the Contractor before the Contractor commences force account work (see "Contractor's Project Labor List" Form located in the appendix of the Project Manual). Once a Contractor's List is accepted by the Engineer, it shall be used to calculate force account labor payment until a requested revised Contractor's List is submitted and accepted. The Engineer may compare the Contractor's List to payrolls and other documents and may, at any time, request the Contractor to submit a revised Contractor's List. The Contractor may also submit a revised Contractor's List at any time for review and acceptance without such a request from the Engineer. Payment calculations made by the Engineer prior to acceptance of a revised Contractor's List shall not be adjusted as a result of a revised Contractor's List.

To be accepted, the Contractor's List must be accurate and meet the requirements of this Section 1-09.6(2). The Contractor's List shall include regular time rates and overtime rates for all employees (or work classifications) expected to participate in force account work. These rates shall include the basic wage and fringe benefits, the current rates for Federal Insurance Compensation (FICA), Federal Unemployment Tax Act (FUTA) and State Unemployment Tax Act (SUTA), the company's present rates for Medical Aid and Industrial Insurance premiums and the planned payments for travel and per diem compensation. These rates may also include an allocation of costs of safety and health testing. This allocation shall assure that the amount included for force account is reasonably proportional to the total costs applied to all Work.

In the event that an acceptable initial Contractor's List or requested revised Contractor's List is not received by the Engineer at the time that force account calculations are begun, the Engineer will develop an Engineer's "Project Labor List" (Engineer's List) unilaterally, utilizing the best data available, that will be used until an initial Contractor's List is received and accepted, or requested revised Contractor's List is received and accepted. Again, prior calculations prepared using the Engineer's List will not be revised as a result of differences with not timely received either initial, or requested revised, acceptable Contractor's List.

The hourly rates established in the current accepted "Project Labor List" shall be applied to the hours of work recorded by the Engineer. The hours of work shall include all hours that are contractual obligations of the Contractor or are customary payments by the Contractor to all employees.

In addition to compensation for direct labor costs defined above, the Owner will pay the Contractor 26 percent of the sum of the costs calculated for labor reimbursement to cover Project overhead, general company overhead, profit, bonding, insurance, Business & Occupation tax, and any other costs incurred.

##### **1-09.6(3) MATERIALS (10-16-00)**

The Owner will reimburse invoice cost for Contractor-supplied "Materials". For the purpose of Section 1-09.6(3), "Materials" shall be Materials and Supplies as defined in Section 1-01.3 of the Standard Specifications. This cost shall include freight and handling charges and applicable taxes. Before force account work is started, the Engineer may require the Contractor to obtain multiple quotations for the "Materials" to be utilized and select the vendor with prices and terms most advantageous to the Owner.



The Engineer will provide a list of the types and quantities of Contractor-supplied "Materials" witnessed by the Engineer as being utilized in force account work. This list will be furnished promptly after the "Material" is incorporated or used, on a daily basis unless another time frame is mutually agreed upon. The Contractor may propose corrections to this list, shall provide prices for the "Materials" and other costs, and shall return the list to the Engineer. To support the prices and other costs, the Contractor shall attach valid copies of vendor invoices. If invoices are not available for "Materials" from the Contractor's stocks, the Contractor shall certify actual costs (at a reasonable level) by affidavit. The Engineer will review the prices and other costs, and any Contractor-proposed corrections and, if reasonable, approve the completed list. Once approved, the prices will be utilized in the calculation of force account reimbursement for "Materials".

If, in the case of non-invoiced "Materials" supported by Contractor affidavit, the price appears to be unreasonable, the Engineer will determine the cost for all or part of those "Materials", utilizing the best data available.

The Owner reserves the right to provide "Materials". In this case, the Contractor will receive no payment for any costs, overhead, or profit arising from the value of the "Materials" themselves. Additional costs to handle and place Owner furnished "Material" shall be compensated as described in Section 1-09.6.

In addition to compensation for direct "Materials" cost, the Owner will pay the Contractor 21 percent of the sum of the costs calculated for "Materials" reimbursement to cover Project overhead, general company overhead, profit, bonding, insurance, Business & Occupation tax, and any other costs incurred.

#### **1-09.6(4) EQUIPMENT (10-16-00)**

The Owner will reimburse the Contractor for the cost of Equipment utilized in the force account work. The Equipment provided by the Contractor shall be of modern design and in good working condition. For the purpose of Section 1-09.6(4), "provided" shall mean that the Equipment is owned (either through outright ownership or through a long-term lease) and operated by the Contractor or Subcontractor, or that the Equipment is rented and operated by the Contractor or Subcontractor. Equipment that is rented with operator shall not be included here, but shall be considered a service and addressed in accordance with Section 1-09.6(5).

The amount of payment for any Contractor-owned Equipment that is utilized shall be determined according to the version of the AGC/WSDOT Equipment Rental Agreement which is in effect at the time the force account work is authorized. The rates listed in the Rental Rate Blue Book (as modified by the current AGC/WSDOT Equipment Rental Agreement) shall be full compensation for all fuel, oil, lubrication, ordinary repairs, maintenance, and all other costs incidental to furnishing and operating the Equipment except labor for operation.

Payment for rented Equipment will be made on the basis of a valid invoice, covering the time period of the force account work. Before this work is started, the Engineer may require the Contractor to obtain multiple quotations for the rental of Equipment to be utilized and select the vendor with prices and terms most advantageous to the Owner.

In addition to the payments for Contractor-owned and rented Equipment, one or more lump-sum payments may be made for small tools. The amount to be paid shall be determined as outlined in the AGC/WSDOT Equipment Rental Agreement.

The Owner will add 21 percent to Equipment costs to cover Project overhead, general company overhead, profit, bonding, insurance, Business & Occupation tax, and any other costs incurred. This markup will be over and above those Equipment costs and will not be adjusted for any Equipment overhead amounts included in the Blue Book rates.

Current copies of the Rental Rate Blue Book and the AGC/WSDOT Equipment Rental Agreement will be maintained by the Engineer, and are also available for inspection at each of the offices of the Associated General Contractors of America (in Seattle, Spokane, Tacoma, and Wilsonville, Oregon).

#### **1-09.6(5) SERVICES (10-16-00)**

Compensation under force account for specialized services shall be made on the basis of an invoice from the providing entity. A "specialized service" shall be one which is typically billed through invoice in standard industry practice. Before force account work is started, the Engineer may require the Contractor to obtain multiple quotations for the specialized service to be provided and select the provider with prices and terms most advantageous to the Owner.

Except as noted in the paragraph immediately below, the Owner will pay the Contractor an additional 21 percent of the sum of the costs included on invoices for specialized services to cover Project overhead, general company overhead, profit, bonding, insurance, Business & Occupation tax, and any other costs incurred.

When a provider of specialized services is compensated through invoice, but acts in the manner of a Subcontractor as described in Section 1-09.6(7), then markup for that invoice shall be in accordance with Section 1-09.6(7).

#### **1-09.6(6) MOBILIZATION (10-16-00)**

Force account mobilization is defined as the preparatory work performed by the Contractor including procurement, loading and transportation of tools and Equipment, and personal travel time (when such travel time is a contractual obligation of the Contractor or a customary payment for the Contractor to all employees). Mobilization also includes the costs incurred during demobilization. Pro-rata adjustments may be made when the mobilization applies to both force account and other Contract work. The Owner will pay for mobilization for off-site preparatory work for force account items provided that notice has been provided sufficiently in advance, as determined by the Engineer, to allow the Engineer to witness the off-site preparatory work, if desired.

Any costs experienced during mobilization activities for labor, Equipment, Materials, Supplies, or services shall be listed in those sections of the force account summary and paid accordingly.

#### **1-09.6(7) CONTRACTOR MARKUP ON SUBCONTRACTOR'S WORK (10-16-00)**

When work is performed on a force account basis by one or more approved Subcontractors, by lower-tier Subcontractors or Suppliers, or through invoice by firm(s) acting in the manner of a Subcontractor, the Contractor will be allowed an additional markup, from the table below, applied to the costs computed for work done by each Subcontractor in Sections 1-09.6(2) through and including 1-09.6(5), to compensate for all administrative costs, including Project overhead, general company overhead, profit, bonding, insurance, Business & Occupation tax, and any other costs incurred.

A firm may be considered to be acting as a Subcontractor when the Engineer observes one or more of the following characteristics:

1. The person in charge of the firm's activities takes an active role in managing the overall Project, including extensive coordination, interpretation of Drawings, interaction with the Owner or Engineer, or management of a complex and inter-related operation.
2. Rented Equipment is provided fueled, operated and maintained by the firm. Operators of rented Equipment are supervised directly by the firm's representative. There is little interaction between the Contractor and the employees of the firm.
3. The firm appears to be holding the risk of performance and quality of the work.
4. The firm appears to be responsible for liability arising from the work.

Markups on amounts paid for work performed by each Subcontractor on each force account and calculated through Sections 1-09.6(2) to and including 1-09.6(5):

On amounts up to \$25,000	12%
On amounts equal to or greater than \$25,000 up to \$100,000	10%
On amounts equal to or greater than \$100,000	7%

The amounts and markup rates shall be calculated separately for each Subcontractor on each force account item established.

The payments provided above shall be full payment for all work done on a force account basis. The calculated payment shall cover all expenses of every nature, kind, and description, including those listed above and any others incurred on the work being paid through force account. Nothing in Section 1-09.6 shall preclude the Contractor from seeking an extension of time or time-related damages to unchanged work arising as a result of the force account work. The amount and cost of any work to be paid by force account shall be computed by the Engineer, and the result shall be final as provided in Section 1-05.1.

An item which has been Bid at a Contract unit price or Contract lump sum price in the Bid will not be paid as force account unless a change as defined in Section 1-04.4 has occurred and the Specifications require a payment adjustment. Bid items which are included in the Bid Form as force account or which are added by Change Order as force account may, by agreement of the parties at any time, be converted to agreed Contract unit prices or Contract lump sum prices applicable to the remaining Work.\*

#### **1-09.7 MOBILIZATION (10-16-00)**

**Delete this Section and replace with the following:**

\*Mobilization consists of preconstruction expenses and the costs of preparatory work and operations performed by the Contractor which occur before 10 percent of the Awarded Contract Price is earned from other than mobilization Contract Bid items. Bid items which are not to be included in the Contract Bid item of Mobilization include but are not limited to:

1. Any portion of the Work covered by the specific Contract Bid item or incidental work which is to be included in a Contract Bid item or items.
2. Profit, interest on borrowed money, overhead, or management costs.
3. Any costs of mobilizing Equipment for force account work.

Based on the Contract lump sum price for "Mobilization," partial payments will be made as follows:

1. When 5 percent of the Awarded Contract Price is earned from other Contract Bid items, excluding amounts paid for Materials on hand, 50 percent of the amount Bid for mobilization, or 5 percent of the Awarded Contract Price, whichever is the least, will be paid.
2. When 10 percent of the Awarded Contract Price is earned from other Contract Bid items, excluding amounts paid for Materials on hand, 100 percent of the amount Bid for mobilization, or 10 percent of the Awarded Contract Price, whichever is the least, will be paid.
3. When the Physical Completion Date has been established for the Project, payment of any amount Bid remaining for mobilization in excess of 10 percent of the Awarded Contract Price will be paid.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the Contract.\*

#### **SECTION 1-10 TEMPORARY TRAFFIC CONTROL**

##### **1-10.2(5)C TRAFFIC CONTROL RESTRICTIONS (10-16-00)**

**Supplement this Section with the following:**

The Traffic Control Plan shall be provided in accordance with the following street and lane closure restrictions:

**3<sup>rd</sup> Avenue NW** shall be opened to full width 7 AM to 9 AM and 4 PM to 6 PM Monday through Friday. It may be reduced to one lane of two way traffic with flaggers at all other times.

**Greenwood Avenue N** shall be open to two southbound lanes 6:00 AM to 9 :30 AM. It may be reduced to one lane southbound from 9:30 AM to 4:30 PM. Northbound lanes shall not be affected. Pedestrians shall be accommodated on the west side or assisted to the east side.

## **DIVISION 2**

### **EARTHWORK**

#### **SECTION 2-01 CLEARING, GRUBBING AND ROADSIDE CLEANUP**

##### **2-01.3(1) CLEARING**

**Supplement the first paragraph with the following:**

Clearing shall also include removal of shrubs, hedges, rockeries, concrete blocks, the six inch concrete strip, concrete pad, asphalt in ditches, transplanting native shrubs, tree protection and limb pruning all as indicated on Drawing Sheets 2 and 3.

**Supplement this Section with the following:**

The native shrub identified on the Drawings for transplanting shall be dug out with rootmass intact and heeled in and mulched to a location as directed by the Engineer.

Removed rock facing may be reused on the project if materials conform with the requirements of Section 8-15.

##### **2-01.3(5) PROTECTION OF EXISTING IMPROVEMENTS**

**Supplement this section with the following:**

Existing native trees within the right-of way shall be protected by installing temporary high visibility fencing at a minimum distance equal to one-half the distance to the drip line away from the trunk, or as directed by the Engineer. Existing trees to be protected will be flagged by the Engineer prior to the start of construction. All clearing and grubbing around native trees shall be selective, by hand methods only and as directed by the Engineer.

High visibility fencing shall be composed of a High Density Polyethylene material and shall be at least 4 feet high. Posts for fencing shall be placed every 5 to 10 feet on center or as directed by the Engineer to ensure rigidity. On long continuous runs , a tension wire or rope shall be used as a top stringer to prevent sagging between posts.

Fencing material shall be free of any chemical treatment and meet the following requirements:

<b>PROPERTY</b>	<b>VALUE</b>	<b>TEST METHOD</b>
Tensile strength	360 lbs / ft	ASTM D4595
Color	High Visibility Orange	

The Contractor shall furnish a certificate or affidavit attesting that the fabric meets all the requirements stated above.

Upon completion of the project or when directed by the Engineer, the high visibility fence shall be removed in its entirety and disposed of by the Contractor.

## **2-01.4 MEASUREMENT**

### **Supplement this Section with the following:**

High visibility fence will not be measured.

## **2-01.5 PAYMENT**

### **Supplement this Section with the following:**

All costs for the work required to furnish, install and remove high visibility fencing shall be included in the lump sum price bid for "Clearing And Grubbing" and no separate payment will be made.

## **SECTION 2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS**

### **SECTION 2-02.3(2) REMOVAL OF BRIDGES, BOX CULVERTS AND OTHER DRAINAGE STRUCTURES**

#### **Supplement this section with the following:**

Backfilling of pipe removal areas shall use native soil backfill material unless otherwise specified by the Engineer. If the Engineer determines structural properties of native backfill material are inappropriate, Mineral Aggregate, Type 17 shall be used.

### **2-02.3(6) SAWING AND LINE DRILLING**

#### **Supplement this Section with the following:**

In addition to the pollution control requirements of 1-07.5 the Contractor shall take special precautions to ensure that no concrete or concrete by-products from, or used in, the saw-cutting of Asphalt Cement or Cement Concrete pavements, sidewalks, curbs, etc. are discharged into any storm drain or surface water system. Such discharge is prohibited by the Department of Ecology. In as much as cutting operations increase the pH of the wastewater filtering prior to discharge will NOT be acceptable.

To thoroughly clean sawcuts the Contractor shall use high pressure water (water under at least 1400 psi.) to flush the cuts while simultaneously collecting the all wastewater using a wet-dry vacuum or similar method, or the wastewater may be pumped directly into drums for disposal. Disposal of waste liquid may be to soil or other porous surfaces away from storm drains and surface water ONLY if the Contractor collects and disposes of the remaining sediment after the water has filtered into the soil or evaporated. Impervious surfaces contaminated with sediment and grit from saw-cutting, planing or pulverizing operations shall be cleaned by sweepers to prevent contaminants from entering the storm drainage system or surface waters when it rains.

Per Section 1-07.5 the cost of pollution control measures taken by the Contractor to prevent saw-cutting or planing contaminants from polluting storm drains or surface water shall be included in the unit Bid prices of the various items of Work which comprise this Contract.

## **SECTION 2-03 ROADWAY EXCAVATION AND EMBANKMENT**

### **2-03.3(19) CONSTRUCTION REQUIREMENTS OF VEGETATED SWALES (New Section)**

#### **2-03.3(19)A DESCRIPTION (New Section)**

Construction of the Vegetated Swales shall consist of excavation; installation of precast concrete manhole structures, weir walls and reinforced soil walls; placement of amended native soil and embankment compaction; placement of swale soil mix, filter fabric, mineral aggregates and rock, finish grading, and mulching.

Filter fabric shall conform to the requirements of Section 2-12.

Aggregates shall conform to the requirements of Section 4-01.

Precast concrete structures and weir walls shall conform to the requirements of Section 7-05.

Soil mixes and mulch shall conform to the requirements of Section 8-02.

Rock shall conform to the requirements of Section 8-15.

#### **2-03.3(19)B SWALE GRADING (New Section)**

Finish grade of the bottom of the Vegetated Swales shall be the Bottom Swale Elevation as shown on the Drawings and/or as required by staking in the field, and/or as directed by the Engineer. Finish grade of the top of the Vegetated Swales shall be a minimum elevation of the Top of Ridge as shown on the Drawings and/or as required by staking in the field, and/or as directed by the Engineer.

Vegetated swale survey staking shall be conducted by SPU survey staff, per Section 1-05.5, and will be done using the 3-dimensional terrain model of the project site available in Autodesk Land Desktop 3 (LDT). The Contractor and the Engineer shall establish the number of survey points to clearly identify swale channel and ridge areas, as well as any additional survey stake requests by the Contractor or Engineer. After staking, swale shape shall be delineated with marking paint by the Contractor. The Engineer shall approve survey information and swale shape before excavation begins. Upon approval of paint markings, stakes shall be set to maintain limits of excavation as directed by the Engineer.

Any existing private drainpipe currently discharging into the right-of-way area shall be cut and reconnected to new swale. A perforated cap shall be placed on the end of the drainpipe to block entrance of animals. PSE shall relocate gas lines in conflict with proposed culvert and swale elevations prior to contractor work in those locations. Contractor shall pothole for gas line locations as requested by Engineer in accordance with Section 7-17.3(5).

Grading within root zones of existing trees to be protected shall be per 8-02.3(23).

After rough grading to the adjusted Bottom Swale Elevation (15-inches below Bottom Swale Elevation), and prior to placement of Amended Soil and Swale Soil Mix in each vegetated swale, the Contractor shall collect a native soil sample. The native soil sample shall be placed into clean 5 gallon bucket. The sample shall be representative of soil located within the bottom of the swale, and include a minimum of 3 collection sites within the bottom of the swale. The Contractor shall label the bucket with the number of the swale and provide the Engineer with the soil sample. The Engineer will transfer sample to SPU's Materials Laboratory for analysis. Soil analysis data will be used for future system performance evaluation.

Native soil selected for earth ridge and reinforced soil wall construction shall be approved by the Engineer. Native fill soil shall be screened and amended with Decomposed Organic Mulch in the quantity necessary for constructing the earth ridges and reinforced soil walls.

Fill material shall be placed in lifts not exceeding 6 inches, with each lift compacted to 85% maximum density, as determined by the compaction control test specified in Section 2-03.3(14)E.

After all fill material has been placed and compacted, the Contractor shall grade amended soil areas to bring earth ridges and other vegetated swale soil areas, except swale bottom, to finish grade as shown in the Drawings. After finish grading is approved by the Engineer, amended soil areas shall be dressed with 4 inches minimum of shredded mulch.

Imported Swale Soil Mix shall be placed in lifts not exceeding 6 inches to a total compacted depth of minimum 1 foot. The Contractor shall compact the Swale Soil Mix with a water filled drum. After all fill material has been placed, the Contractor shall grade the vegetated swale bottom areas and mulch with 3 inches maximum of Mineral Aggregate Type 4 to bring the Bottom Swale Elevation to finished grade.

Amended Soil and Swale Soil Mix shall not be placed when the ground or soil is frozen, excessively wet or, in the opinion of the Engineer, in a condition detrimental to the work.

Should grading conflict with existing site conditions, consult with the Engineer prior to proceeding with the work. The slopes shall be graded in a uniform manner per Standard Plan No. 140 or as set by the Engineer. Rounding shall be done at abrupt changes in surfaces. Feather grades gradually to meet existing contours. Minor adjustments to the swale grading and contouring shown in the Drawings are anticipated to meet site conditions and to provide for the intent of grading. Hand grading and final refinement of swale bottom and Amended Soil areas shall be as directed by the Engineer. The Engineer shall have final approval of all grading and contouring.

### **2-03.3(19)C REINFORCED SOIL WALL (New Section)**

Reinforced soil wall survey staking shall be provided by SPU per Section 2-03.3(19)B. The Contractor shall have wall locations approved by the Engineer prior to construction. The Contractor shall provide cut slope excavation for construction of Reinforced Soil Walls as shown in the Drawings and per soil wrap materials manufacturer's recommendations. Lifts of Amended Soil shall not exceed one foot, with each lift compacted to 85% maximum density, as determined by the compaction control test specified in Section 2-03.3(14)E. Reinforced soil wrap materials shall consist of Biaxial Geogrid per Section 9-14.5(4) over Erosion Control Blanket per Section 9-14.5(5).

Amended soil used in reinforced soil walls shall not be placed when the ground or soil is frozen, excessively wet or, in the opinion of the Engineer, in a condition detrimental to the work.

### **2-03.3(20) CONSTRUCTION REQUIREMENTS OF EARTH BERMS (New Section)**

Construction of the earth berms shall consist of clearing and grubbing, placement of amended native soil, embankment compaction, finish grading, and mulching on the south side of NW 110<sup>th</sup> Street, and the area just east of the alley between Palatine Ave N. and Greenwood Ave N. Finish grade of the of earth berms shall be as required by staking in the field, and/or as directed by the Engineer.

Native soil selected for earth berm construction shall be approved by the Engineer. Native soil fill shall be screened and amended with Decomposed Organic Mulch in the quantity necessary for constructing the earth berms.

Fill material shall be placed in lifts not exceeding 6 inches, with each lift compacted to 85% maximum density, as determined by the compaction control test specified in Section 2-03.3(14)E. The Contractor shall compact earth berms with a water-filled drum.

After all fill material has been placed and compacted, the Contractor shall grade amended soil areas to bring earth berms to finish grade as shown in the Drawings and as directed by the Engineer. After finish grading is approved by the Engineer, amended soil areas shall be dressed with 4 inches minimum of shredded mulch.

Amended soil for earth berms shall not be placed when the ground or planting soil is frozen, excessively wet or, in the opinion of the Engineer, in a condition detrimental to the work.

Should grading conflict with existing site conditions, consult with the Engineer prior to proceeding with the work. The slopes shall be graded in a uniform manner per Standard Plan No. 140 or as set by the Engineer. Rounding shall be done at abrupt changes in surfaces. Feather grades gradually to meet existing contours. Minor adjustments to the earth berm grading and contouring shown are anticipated to meet site conditions and to provide for the intent of grading. Hand grading and final refinement of earth berms shall be as directed by the Engineer. The Engineer shall have final approval of all grading and contouring.

## **2-03.4 MEASUREMENT**

**Supplement this section with the following:**

Measurement for "Reinforced Soil Wall" will be by the square foot installed measured on the vertical face.  
Measurement for "Finish Grading" will be by the square foot.

## **2-03.5 PAYMENT**

**Supplement item 9. with the following:**

(9) Other Payment Information

Payment for Earth Berm construction shall be made using the bid items "Common Excavation", "Decomposed Organic Mulch", "Embankment Compaction", "Finish Grading" and "Shredded Mulch".

**Supplement this Section with the following:**

(10) "Reinforced Soil Wall", per square foot.

The unit contract price for "Reinforced Soil Wall" shall include the costs for the work required to construct reinforced soil walls as specified and as indicated on the Drawings, including but not limited to placing and compacting amended native soil backfill, the Biaxial Geogrid and the Erosion Control Blanket.

Excavation required for the reinforced soil wall construction will be paid as "Common Excavation".  
"Decomposed Organic Mulch" used to amend native soil will be paid separately in accordance with Section 8-02.  
Embankment compaction of amended native soil will not be measured.  
Placement of "Shredded Mulch" on the top of walls will be paid separately in accordance with Section 8-02.

(11) "Finish Grading", per square foot.

The unit contract price for "Finish Grading" shall include all costs for the work required to hand grade earth berms, earth ridges, vegetated swales and grass swales to final shape after excavation and embankment compaction work is completed.

## **SECTION 2-09 STRUCTURE EXCAVATION**

### **2-09.5 PAYMENT**

**Delete this Section in its entirety and replace with the following:**

Structural excavation will not be measured or paid on this project. All excavation unless otherwise specified will be paid as "Common Excavation".

## **SECTION 2-12 CONSTRUCTION GEOTEXTILE**

### **2-12.5 PAYMENT**

**Supplement this Section with the following:**

(8) "Filter Fabric", per square yard.

The unit contract price for "Filter Fabric" shall include all costs for the work required to furnish and install filter fabric as specified and as indicated on the Drawings.



## **DIVISION 4**

### **BASES**

#### **SECTION 4-01 MINERAL AGGREGATES**

##### **4-01.2 MATERIALS**

**Supplement this Section with the following:**

At Contractor option, recycled glass may be blended with aggregates used for shoulder ballast. Recycled glass aggregate shall conform to the requirements of Section 9-03.20.

##### **4-01.5 PAYMENT**

**Supplement this Section with the following:**

- (3) "Rock Swale, Extra Labor For", per linear foot.

The unit contract price for "Rock Swale, Extra Labor For" shall include all costs for the labor required to form, shape and compact the materials used for rock swale construction as indicated on the Drawings.

The intent of the "Rock Swale, Extra Labor For" bid item is to reimburse the Contractor for the additional labor that rock swale construction requires when compared to typical installations of mineral aggregates.

Payment for excavation and mineral aggregate will be made separately using the Bid Items "Common Excavation" and "Mineral Aggregate, Type 2" respectively.

## **DIVISION 5**

### **SURFACE TREATMENTS AND PAVEMENTS**

#### **SECTION 5-04 ASPHALT CONCRETE PAVEMENT**

##### **5-04.5 PAYMENT**

**Supplement this section with the following:**

- (10) "Asphalt Swale, Extra Labor For", per linear foot.

The unit contract price for "Asphalt Swale, Extra Labor For" shall include all costs for the labor required to form, shape and compact the materials used for asphalt swale construction as indicated on the Drawings.

The intent of the "Asphalt Swale, Extra Labor For" bid item is to reimburse the Contractor for the additional labor that asphalt swale construction requires when compared to typical installations of asphalt paving and mineral aggregates.

Payment for sawcutting, excavation, mineral aggregate and asphalt will be made separately using the Bid Items "Saw Asphalt Concrete, Full Depth", "Common Excavation", "Mineral Aggregate, Type 2" and "Pavement, Asphalt Concrete, CI A" respectively.

## **DIVISION 7**

### **STORM DRAIN, CULVERTS, SANITARY AND COMBINED SEWERS, WATER MAINS AND RELATED STRUCTURES**

#### **SECTION 7-05 MANHOLES, CATCH BASINS, AND INLETS**

##### **7-05.3(2)G SEDIMENTATION STRUCTURE (New Section)**

Precast manhole sections used in sedimentation structures shall be supplied by the Owner in the quantity identified in the Appendix. Manhole sections identified in the Appendix are available for pickup from Hansen Pipe & Products, Inc., Tacoma, WA (253-475-8888; Contact: Ed Weller). Contact Hansen Pipe & Products a minimum of 7 days prior to pickup.

Base sections to be placed in conjunction with Owner supplied recycled manhole sections shall match the joints of Hansen Pipe manhole sections. Recycled manhole sections supplied by the Owner shall be placed so that joint detail matches Drawings. This joint detail orientation will require Owner supplied manholes, with the exception of the 84" mortar joint manholes, to be placed upside down. To support the inverted manhole structures, a flat top unit shall be used as the base section. The opening in the flat top unit does not need to be sealed.

Recycled manhole sections having holes greater than 6-inches in diameter shall be sealed by refabricating wire mesh reinforcement in the area and sealing hole with concrete. Refabrication of wire mesh shall be executed by installing #4 rebar 3-inches on center. Vertical rebar shall be embedded into the structure a minimum of 6-inches. Existing hole surface shall be roughened prior to sealing with concrete.

The Contractor shall install a ladder into recycled manhole sections that do not have a ladder. Ladders shall conform with Standard Plan No. 232.

The Contractor shall supply manhole sections as required in excess of those supplied by the Owner. Manhole sections supplied by the Contractor shall conform to Standard Plan 201b, without top structure and with joint details as shown in the Drawings.

The exposed face of all concrete manhole structures shall be sand blasted and stained a medium gray color. The Engineer shall approve the concrete stain color prior to application. Concrete stain shall be applied per manufacturer's recommendations.

After manhole sections have been placed in their final positions, cut outlet notches and place trash racks (type A and C) as indicated on the Drawings. Trash Rack 'A' rebar shall be bent to the approximated curvature of manhole prior to galvanization process. If additional field bending to achieve manhole curvature exposes any areas of the metal, the Contractor shall paint rebar to inhibit corrosion as directed by the Engineer.

The metal lid for sedimentation structures shall be fabricated by others for installation on site by the Contractor. Installation of metal lids shall be as shown in the Drawings. Fasteners for metal lids shall be aluminum or stainless steel of sizes as shown in the Drawings. Rubber gaskets, fasteners and sleeves for installation of metal lids shall be provided by the Contractor. The Contractor shall be responsible for transporting the lid from the Seattle area manufacturer to the project site.

##### **7-05.3(2)H WEIR WALL STRUCTURE (New Section)**

Weir walls used for weir wall structures shall be as shown on Drawings. Weir wall may be precast or cast in place. Precast weir walls shall be manufactured by Cuz Concrete, Arlington, WA 360-435-5531 or approved equal.

Weir Wall Area shall use Weir Wall 'A'. Modified Weir Wall Area, used at Station 12+32.0 only, shall use Weir Wall 'B'.

Flow control plates shall only be installed on Weir Wall 'A'.

After weir walls have been placed, exposed wall faces shall be sand blasted and stained a medium gray color. The Engineer shall approve the concrete stain color prior to application. Concrete stain shall be applied per manufacturer's recommendations.

#### **7-05.3(2)I OUTLET STRUCTURE (New Section)**

Precast manhole sections used in outlet structures shall be supplied by the Owner in the quantity identified in the Appendix. Manhole sections identified in the Appendix are available for pickup from Hansen Pipe & Products, Inc., Tacoma, WA (253-475-8888; Contact: Ed Weller). Contact Hansen Pipe & Products a minimum of 7 days prior to pickup.

Base sections to be placed in conjunction with Owner supplied recycled manhole sections shall match the joints of Hansen Pipe manhole sections. Recycled manhole sections supplied by the Owner shall be placed so that joint detail matches Drawings. This joint detail orientation will require Owner supplied manholes, with the exception of the 84" mortar joint manholes, to be placed upside down. To support the inverted manhole structures, a flat top unit shall be used as the base section. The opening in the flat top unit does not need to be sealed.

Manhole sections supplied by the Owner which contain an existing holes greater than a 6-inches diameter shall be sealed by refabricating wire mesh reinforcement in the area and sealing hole with concrete. Refabrication of wire mesh shall be executed by installing #4 rebar 3-inches on center. Vertical rebar shall be embedded into the structure a minimum of 6-inches. Existing hole surface shall be roughened prior to sealing with concrete.

The Contractor shall install a ladder into recycled manhole sections that do not have a ladder. Ladders shall conform with Standard Plan No. 232.

The Contractor shall supply manhole sections as required in excess of those supplied by the Owner. Manhole sections supplied by Contractor shall conform with Standard Plan 201b, without top structure and with joint details as shown in the Drawings.

The exposed face of all concrete manhole structures shall be sand blasted and stained a medium gray color. The Engineer shall approve the concrete stain color prior to application. Concrete stain shall be applied per manufacturer's recommendations.

After manhole sections have been placed in their final position, trash racks (type B) shall be installed as indicated on the detail located in the Appendix.

The metal lid for outlet structures shall be fabricated by others for installation on site by the Contractor. Installation of metal lids shall be as shown in the Drawings. Fasteners for metal lids shall be aluminum or stainless steel of sizes as shown in the Drawings. Rubber gaskets, fasteners and sleeves for installation of metal lids and transportation of lids from manufacturer shall be provided by the Contractor. The Contractor shall be responsible for transporting the lid from the Seattle area manufacturer to the project site.

#### **7-05.3(2)J FLOW MONITORING WEIRS (New Section)**

Contractor shall install two (2) flow monitoring weirs as described in this section and as directed by Engineer. Flow monitoring weirs shall be supplied by the Owner. Contact Tracy Tackett, 386-0052, a minimum of 14 days prior to installation, to coordinate delivery of flow monitoring weirs.

The flow monitoring weir installed into the sedimentation structure manhole at station 2+42.1 shall be mounted from the inside of the maintenance hole at the location of the outlet notch. Flow monitoring weir shall be attached to maintenance hole using channel sections such that the weir plate can be removed and replaced with other flow monitoring weir plates. Channel sections shall be attached to maintenance hole and sealed to restrict water from exiting notch around plate. Installation details shall be supplied by Engineer prior to flow monitoring plate attachment.

The flow monitoring weir installed into the outlet structure manhole at station 11+39.0 shall be mounted to the 18-inch diameter ductile iron pipe. The DIP shall extend into the manhole a minimum of 6-inches and have a flanged end. Weir plate will be mounted with stainless steel bolts onto the flanged end such that the weir plate notch centerline is oriented straight vertically. Installation details shall be supplied by Engineer prior to flow monitoring plate attachment.

The Contractor shall supply all fasteners, channel sections and other mounting hardware required for a complete installation.

#### **7-05.4 MEASUREMENT**

**Supplement this section with the following:**

Measurement for sedimentation structure, weir wall structure, and outlet structure will be by each structure installed.

#### **7-05.5 PAYMENT**

**Supplement this section with following:**

- (10) "Outlet Structure With Recycled Manhole Sections, (Size)", per each.
- (11) "Outlet Structure, (Size)", per each.
- (12) "Sedimentation Structure With Recycled Manhole Sections, (Size)", per each.
- (13) "Sedimentation Structure, (Size)", per each.
- (14) "Trash Rack, Type C With 8 Inch Diameter Weep Hole", per each.
- (15) "Install Owner Furnished Flow Monitoring Weir", per each.
- (16) "Weir Wall, (Type)", per each.

The unit contract price for "Outlet Structure With Recycled Manhole Sections, (Size)" shall include all costs for the work required to have Owner furnished recycled manhole sections delivered to the job site, excavation, bedding, installation of manhole sections on Contractor furnished precast concrete base, mortar, non-shrink grout, hole repair, notching, ladder, connections to pipelines, installation of trash rack type B, backfill with suitable native material and installation of Owner furnished metal lid.

The unit contract price for "Sedimentation Structure With Recycled Manhole Sections, (Size)" shall include all costs for the work required to have Owner furnished manhole sections delivered to the job site, excavation, bedding, installation of manhole sections on Contractor furnished precast concrete base, mortar, non-shrink grout, hole repair, notching, ladder, connections to pipelines, installation of trash rack type A, backfill with suitable native material and installation of Owner furnished metal lid.

The unit contract price for "Outlet Structure, (Size)" and "Sedimentation Structure, (Size)" shall include all costs for the work required to furnish and install manhole sections with a precast concrete base complete to finished grade including excavation, bedding, mortar, non-shrink grout, notching, ladder, connections to pipelines, trash racks (type A & B), backfill with suitable native material and installation of Owner furnished metal lid.

The unit contract price for "Trash Rack, Type C With 8 Inch Diameter Weep Hole" shall include all costs for the work required to core drill the weep hole and to furnish and install the trash rack as specified and as indicated on the Drawings.

The unit contract price for "Install Owner Furnished Flow Monitoring Weir" shall include all costs for the work required to coordinate delivery of weirs to job site and to install the weirs as specified and as indicated on the Drawings. Cost of flanged pipe end on the ductile iron pipe shall be considered incidental to the bid item "Pipe Culvert, D.I., CL 52, 18 In" and no separate payment will be made.

The unit contract price for "Weir Wall, (Type)" shall include all costs for the work required to furnish and install weir walls as specified and as indicated on the Drawings complete to finish grade including excavation and bedding. Mineral aggregate Type 17 backfill will be paid separately.

## **SECTION 7-11 PIPE INSTALLATION FOR WATER MAINS**

### **7-11.3(9)C WATER SERVICE CONNECTIONS**

**Supplement this section with the following:**

Where water services must be relocated due to utility conflicts from this project, the water service shall be relocated per SPU-Water Standards (services shall be perpendicular to the water main, in front of the property they service, and the meter shall be located in non-traffic areas).

Where water service locations change laterally along the water main, the Contractor shall perform the construction of the private water service plumbing. The Contractor shall coordinate this work to the satisfaction of the affected property owner and SPU-Water. When the private plumbing work is complete, the Contractor shall coordinate with SPU-Water for reconnection SPU-Water piping.

## **SECTION 7-17 STORM DRAINS AND SANITARY SEWERS**

### **7-17.3(1)B2 BEDDING FOR RIGID PIPE**

**Supplement sub section 2. Class B Bedding with the following:**

At Contractor option, recycled glass may be blended with aggregates used for pipe bedding. Recycled glass aggregate shall conform to the requirements of Section 9-03.20.

### **7-17.3(5) POTHOLING AND FIELD INVESTIGATION (New Section)**

The Engineer may direct the Contractor to pothole at specific locations in order to locate depth of existing utilities. The Contractor shall call to locate utilities prior to potholing. The Contractor shall mobilize equipment, excavate, shore, backfill, provide temporary pavement patch if needed and provide the Engineer with a report indicating the location and relative depth of utilities/objects within the pothole location. The temporary pavement patch shall consist of 3 inches of MC 250 over 6 inches of Mineral Aggregate, Type 2.

### **7-17.5 PAYMENT**

**Supplement this Section with the following:**

(14) "Pothole (Depth) & Field Investigation", per each.

The unit contract price for "Pothole, (Depth) & Field Investigation" shall include all costs for the work required to complete the pothole and field investigation as specified in Section 7-17.3(5).

## **DIVISION 8**

### **MISCELLANEOUS CONSTRUCTION**

#### **SECTION 8-02 ROADSIDE PLANTING**

##### **8-02.2 MATERIALS**

**Supplement this Section with the following:**

Materials shall meet the requirements of the following Sections:

Amended Soil	9-14
Swale Soil Mix	9-14
Shredded Mulch	9-14

Amended Soil shall be used on all areas, except swale bottom, and unless otherwise specified in the Drawings or the Project Manual.

Swale Soil Mix shall be used on all swale bottoms, unless otherwise specified in the Drawings or the Project Manual.

Mulch for all amended soil areas shall consist of Shredded Mulch, unless otherwise specified in the Drawings or the Project Manual.

Mulch in swale bottoms shall consist of Mineral Aggregate Type 4.

##### **8-02.3(23) TREE ROOT PRUNING PROCEDURE**

**Delete this section and replace with the following:**

All grading within the critical root zone shall be done under the direction of the Engineer. Root structure 2 inches or greater shall not be cut. All tree roots 2 inches or greater shall be tunneled under. Roots smaller than 2 inches must be cleanly cut flush with the edge of the trench. No ripping or tearing of the root structure will be allowed. See Section 1-07.16(2).

**Supplement this Section with the following:**

When trenching within drip lines of trees, root pruning shall be conducted as directed by Engineer. City Engineer or Landscape Architect shall be on site during root pruning. Root pruning work shall be incidental to pipe installation.

##### **8-02.4 MEASUREMENT**

**Supplement this Section with the following:**

Measurement for "Shredded Mulch" shall be per cubic yard measured in the hauling conveyance at the point of delivery. The Contractor shall notify the Engineer at least 24 hours prior to material delivery to ensure the Engineer's presence for measurement at the time of delivery. No payment will be made for material deliveries not witnessed by the Engineer.

No measurement will be made for "Amended Soil" and "Swale Soil Mix".

## **8-02.5 PAYMENT**

**Supplement this Section with the following:**

(18) "Shredded Mulch" per cubic yard.

The unit contract price for "Shredded Mulch" shall include all costs to furnish, stockpile, and install the mulch as specified.

Payment for the work required to furnish and install "Amended Soil" will be made separately using the Bid Items "Common Excavation", "Embankment Compaction" and "Decomposed Organic Mulch".

Payment for the work required to furnish and install "Swale Soil Mix" will be made separately using the Bid Items "Mineral Aggregate, Type 7" and "Decomposed Organic Mulch".

Cost of soil testing shall be considered incidental to the various items comprising this improvement and no separate payment will be made.

## **SECTION 8-03 IRRIGATION SYSTEM**

### **8-03.1 DESCRIPTION**

**Replace the first paragraph of this section with the following:**

This work shall consist of furnishing and installing a manual quick coupling valve irrigation system, including point of connection and backflow prevention device as indicated on the Drawings.

### **8-03.2 MATERIALS**

**Replace this section with the following:**

Materials shall meet the requirements of the following Sections:

Galvanized Pipe and Fittings	9-15
Polyvinyl Chloride Pipe and Fittings	9-15
Quick Coupling Equipment	9-15
Double Check Valve Assemblies	9-15
Reduced Pressure Valves	9-15

Irrigation equipment and manufacturers shall be as indicated on the Drawings, or approved equivalent in materials and performance.

## **SECTION 8-04 CEMENT CONCRETE CURB, CURB AND GUTTER**

### **8-04.3(8) WHEEL STOP CURB (New Section)**

Wheel stop curb shall be "Bumper Curb Port Style" as manufactured by Utility Vault Co., phone (206) 839-3500 or approved equal.

### **8-04.5 PAYMENT**

**Supplement this Section with the following:**

(4) "Wheel Stop Curb, Precast Concrete", per each.

The unit contract price for "Wheel Stop Curb, Precast Concrete" shall include all costs for the work required to furnish and install the wheel stop curb as specified and as indicated on the Drawings.

## **SECTION 8-12 CHAIN LINK FENCE AND WIRE FENCE**

### **8-12.3(4) RECYCLED PLASTIC FENCE (New Section)**

Fence shall be post and rail type with three (3) rails. Fence material shall be manufactured from a minimum of 80% recycled high-density polyethylene. Installation shall follow manufacturer guidelines, with the post embedded a minimum of 30-inches into a PVC sleeve. To secure post, sleeve shall be filled with mineral aggregate type 9 to secure post. Posts shall be a maximum of 5'-feet 3-inches apart. Color shall be a brown or weathered wood variation. Recycled plastic material shall have a 20 year manufacturers warrantee. Submit sample to Engineer for approval 7 days prior to installation. Fence shall be where shown on Drawings and as directed by Engineer.

Fence shall be supplied by Aeolian Enterprises or approved equal.

Distributor - Schrader Co., Bob Lewis, 8216 23rd PI NE Everett, 98205 425.377.1550

### **8-12.4 MEASUREMENT**

**Supplement this Section with the following:**

Recycled plastic fence will be measured by the linear foot of completed fence, along the ground line, exclusive of openings.

### **8-12.5 PAYMENT**

**Supplement this Section with the following:**

(9) "Fence, Recycled Plastic, Post & Rail", per linear foot.

The unit contract price for "Fence, Recycled Plastic, Post & Rail" shall include all costs for the work required to furnish and install a complete fence as specified including but not limited to rails, posts, post caps, fence pins, pvc sleeves, mineral aggregates, excavation, backfill and compaction.

## **SECTION 8-15 RIPRAP**

### **8-15.4 MATERIALS**

**Supplement this Section with the following:**

River Rock shall be 4-8" size smooth washed rock as available from Homestead Valley Sand & Gravel (425.831.6125) or approved equal.

Streambed Cobbles shall be 2-4" size smooth washed rock as available from Homestead Valley Sand & Gravel (425.831.6125) or approved equal.

Splash Rock shall be as specified in Section 9-03.

1-Man and 3-4 Man Rocks shall be granite rocks as specified in Section 9-03.

### **8-15.5 MEASUREMENT**

**Supplement this Section with the following:**

Measurement for "River Rock, (Size)" and "Streambed Cobbles, (Size)" will be by the ton.  
Measurement for "Splash Rock", "1-Man Rock" and "3-4 Man Rock" will be by each.



#### 8.15.4 PAYMENT

Supplement this Section with the following:

- (8) "River Rock, (Size)", per ton.
- (9) "Streambed Cobbles, (Size)", per ton.

The unit contract price for "River Rock (Size)" and "Streambed Cobbles, (Size)" shall include all costs for the work required to furnish and install river rock and cobbles at locations indicated in the Drawings.

- (10) "Splash Rock", per each.
- (11) "1-Man Rock", per each.
- (12) "3-4 Man Rock", per each.

The unit contract price for "Splash Rock", "1-Man Rock" and "3-4 Man Rock" shall include all costs for the work required to furnish and install the various rocks at locations indicated in the Drawings.

### DIVISION 9

#### MATERIALS

##### SECTION 9-03 AGGREGATES

##### SECTION 9-03.18 SPLASH ROCK (New Section)

Splash Rock shall be native granite stone. Dimensions shall be 30-inches minimum wide in any horizontal direction and 6-inches minimum deep in any vertical direction. Rock shall be approximately 165 pounds per cubic foot.

##### SECTION 9-03.19 GRANITE ROCK (New Section)

Granite rock shall be native stone, locally quarried and "High Cascade Granite" or "Bandera Weathered Granite" as available from Marenakos Rock Center (425.392.3313) or approved equal. If a source other than Maranakos is proposed, the Engineer shall inspect rocks at the quarry for approval of material prior to its delivery on site. Rock shall be approximately 165 pounds per cubic foot.

Size	Approx Weight	Minimum Approx Dimensions	Approx Volume
One-man rock	200 - 400 lbs	12 to 24 inches	2.0 cf
Two-man rock	500 - 800 lbs	24 to 36 inches	4.0 cf
Three-man rock	900 - 1200 lbs.	36 to 48 inches	6.6 cf
Four-man rock	1300 - 1600 lbs	48 to 54 inches	12.5 cf

##### 9-03.20 RECYCLED GLASS AGGREGATE (New Section)

At Contractor option, reclaimed glass may be blended with the following materials used on this project:

Shoulder Ballast	9-03.9(2)
Gravel Backfill for Pipe Zone Bedding	9-03.12(3)

Aggregates containing reclaimed glass shall conform to the requirements of these Specifications for each item listed above. No aggregate shall contain more than 15 percent glass by weight. No more than 10 percent of the material retained on an individual sieve 1/4-inch or larger shall be glass, based upon visual examination and weight.

One hundred percent of the glass shall pass a 3/4-inch square sieve and not more than 5 percent by weight

shall pass a U.S. No. 200 sieve. Sieve analysis shall be conducted according to AASHTO T 27 on at least a quarterly basis by the product supplier. All test results shall be kept on file by the product supplier.

The maximum debris level shall be 10 percent. Debris is defined as any deleterious material which impacts the performance of the engineered fill and includes all non-glass constituents of the glass feedstock. The percentage of debris in cullet shall be quantified using the following visual method. Approximately 200 grams of processed cullet shall be placed in a flat pan or plate. The percentage of debris shall be estimated using AGI Data Sheets 15.1 and 15.2 "Comparison Charts for Estimating Percentage Composition," by the American Geological Institute, 1982.

Total lead content testing shall be performed quarterly by the product supplier. Tests shall include a minimum of five samples. Sample collection shall be conducted according to ASTM D75. The mean of these tests shall not exceed 80 ppm. Total lead content testing will be conducted according to EPA Method 3010/6010. All test results shall be kept on file by the product supplier.

## **SECTION 9-14 EROSION CONTROL AND ROADSIDE PLANTING**

### **9-14.1(6) AMENDED SOIL (New Section)**

Amended Soil shall consist of approximately two-thirds approved on site soil per Section 2-03.3(19) and one-third Decomposed Organic Mulch per Section 9-14.4(8) by volume, thoroughly mixed together.

Native soil shall be screened to remove rocks and debris larger than ½ inch prior to mixing with Decomposed Organic Mulch and shall meet the following gradation requirements:

<b><u>Sieve Size</u><sup>1</sup></b>	<b><u>Percent Passing</u></b>
3/8	100
#35	85-100
#100	40-60
#270	10-30

<sup>1</sup>US Standard Sieve Size

Amended Soil shall be pre-mixed either on site or off site prior to final placement.

Site specific soil testing after placement of Amended Soil will be required on this Project. Soil testing shall be done by an approved independent laboratory. Soil testing shall include soil fertility, micronutrient analysis and organics content. A copy of the test results with recommendations for amendments shall be provided to the Engineer. Laboratory recommendations for amendments required for optimum plant establishment and early growth shall be provided and incorporated into the soil by the Contractor at no cost to the Owner. Any additional amendments recommended by test results shall be organic and contain no deleterious materials that may enter the water in the swales. Four (4) Working Days shall be allowed for testing.

### **9-14.1(7) SWALE SOIL MIX (New Section)**

Swale Soil Mix shall consist of approximately 70% Mineral Aggregate Type 7 and 30% Decomposed Organic Mulch per Section 9-14.4(8) by volume, thoroughly mixed together.

Site specific soil testing after placement of Swale Soil Mix will be required on this Project. Soil testing shall be done by an approved independent laboratory. Soil testing shall include soil fertility, micronutrient analysis and organics content. A copy of the test results with recommendations for amendments shall be provided to the Engineer. Laboratory recommendations for amendments required for optimum plant establishment and early growth shall be provided and incorporated into the soil by the Contractor at no cost to the Owner. Any additional amendments recommended by test results shall be organic and contain no deleterious materials that may enter the water in the swales. Four (4) Working Days shall be allowed for testing.

#### 9-14.4(10) SHREDDED MULCH (New Section)

Shredded Mulch shall be chipped and/or shredded tree trimmings, free of weeds, and shall not contain excessive resin, tannin, wood fiber, garbage or other ingredients detrimental to plant life. Trees and woody vegetation cleared on site, if any and as approved by Engineer, may be chipped or shredded and stockpiled on site for use as Shredded Mulch.

Off site sources for shredded tree trimming mulch include: Local utility tree trimming services and private tree trimming services (Seattle Tree Preservation, Inc., Ballard Tree Service, Inc., City Foresters, Asplundh) or approved equal. A two pound sample of Shredded Mulch proposed to be used shall be submitted to the Engineer for approval.

#### 9-14.5(4) BIAXIAL GEOGRID (New Section)

Biaxial Grid shall be a regular grid structure formed by biaxially drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib and junction cross sections sufficient to permit significant mechanical interlock with the soil material being reinforced. The Biaxial Geogrid shall have high flexural rigidity and high tensile modulus in relation to the soil material being reinforced, and shall also have high continuity of tensile strength through all ribs and junctions of the grid structure. The Biaxial Geogrid shall maintain its reinforcement and interlock capabilities under repeated dynamic loads while in service and shall also be resistant to ultraviolet degradation, to damage under normal construction practices, and to all forms of biological or chemical degradation normally encountered in the soil material being reinforced.

Biaxial Geogrid shall also conform in all respects to the property requirements listed below for Tensar Biaxial Geogrid BX1120 (SS-1) or approved equivalent product in materials and performance:

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>UNITS</u>	<u>VALUE</u>
Interlock			
-aperture size <sup>1</sup>	I.D. Calipered <sup>2</sup>		
-MD		inch	1.0 nominal
-CMD		inch	1.3 nominal
-open area	COE Method <sup>3</sup>	percent	70 minimum
-thickness	ASTM D1777-64		
-ribs		inch	0.03 nominal
-junctions		inch	0.11 nominal
Reinforcement			
-flexural rigidity	ASTM D1388-64 <sup>4</sup>	mg - cm	250,000 min
-tensile modulus	GRI GG1-87 <sup>5</sup>	lb/ft	14,000 min
-junctions	GRI GG2-87 <sup>6</sup>		
-strength		lb/ft	765 minimum
-efficiency		percent	90 minimum
Material			
-polypropylene	ASTM D4101 Group 1/Class 1/Grade 2	percent	97 minimum
-carbon black	ASTM 4218	percent	2.0 minimum
Dimensions			
-roll length		feet	164
-roll width		feet	9.8 & 13.1
-roll weight		lb	71 & 95

#### Notes:

1.MD dimension is along roll length. CMD dimension is across roll width.

2.Maximum inside dimension in each principal direction measured by calipers.

3.Percent open area measured without magnification by Corps of Engineers method as specified in CW 02215 Civil Works Construction Guide, November 1977.

- 4.ASTM D1388-64 modified to account for wide specimen testing as described in Tensar test method TTM 5.0 "Stiffness of Geosynthetics"
- 5.Secant modulus at 2 percent elongation measured by Geosynthetic Research Institute method GG1-87 "Geogrid Tensile Strength." No offset allowances are made in calculating secant modulus.
- 6.Geogrid junction strength and junction efficiency measured by Geosynthetic Research Institute test method GG2-87 "Geogrid Junction Strength".

#### **9-14.5(5) EROSION CONTROL BLANKET (New Section)**

Erosion Control Blanket shall be a lofty web of polyolefin fibers between two high strength, biaxially oriented nets and bound securely together by parallel stitching with polyolefin thread. Every component of the blanket shall be stabilized against ultraviolet degradation and inert to chemicals normally encountered in a natural soil environment. The Erosion Control Blanket shall also conform to the following physical property requirements listed for Tensar Erosion Blanket TB-1000, or approved equivalent product in materials and performance:

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>VALUE</u>
Thickness (inches)	ASTM D1777	0.40 min
Weight (oz/yd)	ASTM D3776	10 min
Specific Gravity	ASTM D1505	0.91
Ground Cover Factor (%) <sup>1</sup>	Light Projection Test	65 minimum
Tensile Strength (lb/ft)	ASTM D1682 (2" Strip) <sup>3</sup>	175 x 110
Elongation (%) <sup>2</sup>	ASTM D1682 (2" Strip) <sup>3</sup>	40
Tensile Strength <sup>2</sup> at 15% Elongation (lb/ft)	ASTM D1682 (2" Strip) <sup>3</sup>	90 x 90
Flexibility (mg.cm) <sup>2</sup>	ASTM D1388	10,000 min
Ultraviolet Stability % Strength Retained after 1000 hours	ASTM D4355	80 minimum
Color		Green
Roll Dimensions		
Length (ft)		120
Width (ft)		7.5
Area (sq.ft.)		900
Weight (lb)		63
Roll Diameter (ft)		2.5

**Notes:**

- 1.Ground Cover Factor represents "% shade" from light projection test.
- 2.Values apply to both machine and cross machine directions.
- 3.Machine direction specimen for 2" strip tests includes one machine direction polyolefin stitch line centered within its width and extending the full length of the specimen.